

The effectiveness of transcutaneous cervical ultrasonography for diagnosing peritonsillar abscess in a patient complaining of sore throat

Hiroshi Hori MD  | Takahiko Fukuchi MD, PhD  | Hitoshi Sugawara MD, PhD 

Department of Comprehensive Medicine 1, Division of General Medicine, Saitama Medical Center, Jichi Medical University, Saitama, Japan

Correspondence

Hiroshi Hori, Division of General Medicine, Department of Comprehensive Medicine 1, Saitama Medical Center, Jichi Medical University, 1-847 Amanuma-cho, Omiya-ku Saitama City, Saitama 330-8503, Japan.

Email: ubm5134@mbr.nifty.com

KEYWORDS

peritonsillar abscess, point-of-care transcutaneous cervical ultrasound, sore throat

A febrile 19-year-old man experiencing pharyngeal pain presented to our emergency outpatient department; his body temperature was 40°C. A transcutaneous cervical ultrasonography revealed swelling of the left palatine tonsil with a hypoechoic mass measuring approximately 25 mm (Figure 1A). No abnormalities were identified in his right palatine tonsil (Figure 1B). Computed tomography (CT) revealed a low-density region in the left palatine tonsil measuring 26 mm × 22 mm, surrounded by

a contrast-enhanced area (figure 2); thus, we established a diagnosis of peritonsillar abscess (PTA). After drainage and administration of sulbactam sodium/ampicillin sodium at 12 g/day, his body temperature was normalized, and the pain ameliorated rapidly. A culture from the abscess identified *Fusobacterium necrophorum*.

PTA is the most common type of deep neck abscess.¹ The primary symptoms of PTA are similar to a common cold and include

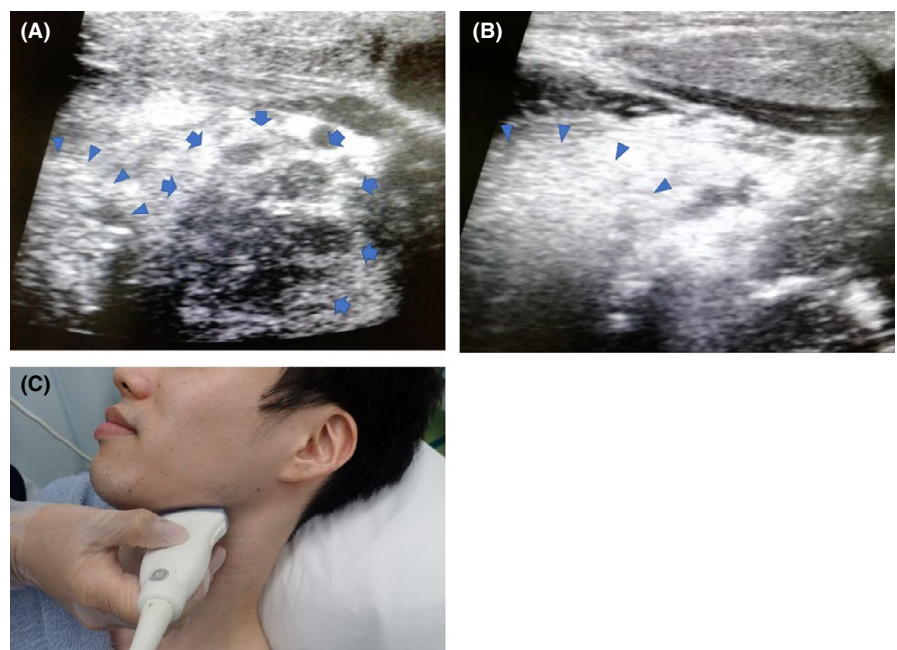


FIGURE 1 The patient was asked to move their tongue (arrowhead) to improve imaging of the tonsil. A swollen palatine tonsil and low-intensity abscess measuring 25 mm in size (arrow) can be seen behind the tongue (A, Video S1). Ultrasonography image of the unaffected side; the right palatine tonsil is not swollen (B, Video S2)

This is an open access article under the terms of the Creative Commons Attribution License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2020 The Authors. *Journal of General and Family Medicine* published by John Wiley & Sons Australia, Ltd on behalf of Japan Primary Care Association

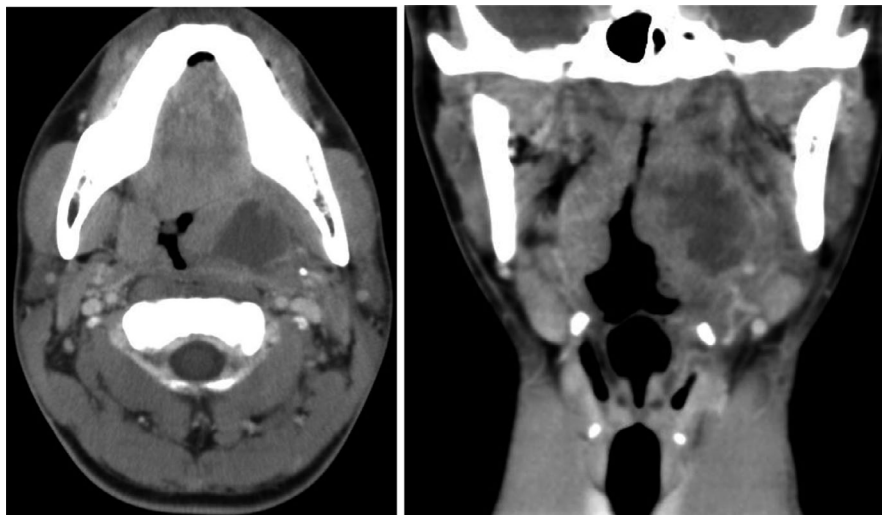


FIGURE 2 Contrast-enhanced computed tomography (CT) of the lateral side of the left tonsil revealed a low-density margin of contrast enhancement measuring 26 mm × 22 mm

fever, unilateral severe sore throat, and painful swallowing. Delayed diagnosis can result in serious complications, such as airway obstruction, sepsis, and Lemierre's syndrome.¹ It is difficult to distinguish peritonsillar cellulitis from PTA using only *physical examination*.² Contrast-enhanced CT scans are effective; however, they incur high costs, involve radiation exposure, and are difficult to obtain in children. Alternatively, ultrasonography is minimally invasive, cost effective, can be performed rapidly, and involves no radiation exposure. Ultrasound methods include intraoral ultrasonography (IOU) and transcutaneous cervical ultrasonography. Transcutaneous cervical ultrasonography has a sensitivity of 80%-91%, a specificity of 80%-93%,³ and is useful for PTA diagnosis; visualization of the jugular also enables evaluation of thrombotic complications (Lemierre's syndrome).

Techniques for imaging a peritonsillar abscess:

1. Use a high-frequency linear transducer (6-12 MHz).
2. Aim the probe at the lower jaw, parallel to the line connecting the ear and jaw (Figure 1C).
3. Delineate the lower jawbone and submandibular gland, and then change the angle of the probe to delineate the tongue and tonsils behind. Having the patient move their tongue enables the palatine tonsils to be easily identified.
4. PTA is suspected in palatine tonsils that have swollen to more than 20 mm in size and present with a low-intensity structure;³ doppler waves do not enter the abscess. Since the size of the palatine tonsils differs between individuals, it is important to compare it with the unaffected side.

Transcutaneous cervical ultrasonography is useful in PTA diagnosis. Skill is required to identify and visualize the lesion.

ACKNOWLEDGEMENTS

The authors would like to thank Editage (<https://www.editage.jp/>) for the English language review.

CONFLICT OF INTEREST

The authors have stated explicitly that there are no conflicts of interest in connection with this article.

INFORMED CONSENT

We have obtained written consent from the patient for publication of the report.

ORCID

Hiroshi Hori  <https://orcid.org/0000-0001-9466-2125>

Takahiko Fukuchi  <https://orcid.org/0000-0001-6192-1653>

Hitoshi Sugawara  <https://orcid.org/0000-0002-5060-9020>

REFERENCES

1. Galio NJ. Peritonsillar Abscess. *Am Fam Physician*. 2017;95(8):501-6.
2. Rehrer M, Mantuani D, Nagdev A. Identification of peritonsillar abscess by transcutaneous cervical ultrasound. *Am J Emerg Med*. 2013;31(1):267.e1-e3.
3. Secko M, Sivitz A. Think ultrasound first for peritonsillar swelling. *Am J Emerg Med*. 2015;33(4):569-72.

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.